

Application Number 10/656,089
Amendment responsive to Office Action mailed January 5, 2007

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REMARKS

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This Amendment is responsive to the Office Action dated January 5, 2007. Applicants have not amended any of the claims. Non-elected claims 1-10, 16-18, 23-32, 38-40, 45-53 and 58-59 have been canceled at this time. Claims 11-15, 19-22, 33-37, 41-44, 54-57 and 60-61 are now pending.

Restriction Under 35 U.S.C. § 121

In the Office Action, the Examiner restricted claims 1-61 under 35 U.S.C. § 121 as follows:

Species I. drawn to figure 7, and defined specifically by claims 1-3, 23-25 and 45-56.

Species II. drawn to figure 9, and defined specifically by claims 4-10, 26-32 and 46-53.

Species III. drawn to figures 12, 13 and 19, and defined specifically by claims 11-15, 19-22, 33-37, 41-44, 54-57 and 60-61.

Species IV. drawn to figure 17, and defined specifically by claims 16-18, 38-40 and 58-59.

Applicants elected Species III with traverse, but hereby affirm this election without traverse. Applicants note, however, that the Examiner's discussion of "species" is not correct, as the different sets of claims are not species of a common genus for purposes of an election requirement, but rather "groups" for purposes of a restriction requirement.

Allowable Subject Matter

In the Office Action, the Examiner objected to claims 13, 14, 35, 36 and 56 as including subject matter that would be allowable if rewritten in independent form.

Claim Rejections Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 11-12, 15, 33-34, 37, 54-55 and 57 under 35 U.S.C. 103(a) as being unpatentable over Weiss (US 6,243,486) in view of Vaidyanathan (US 5,671,290). In addition, the Examiner rejected claims 19-22, 41-44 and

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60-61 under 35 U.S.C. 103(a) as being unpatentable over Weiss in view of Vaidyanathan, and further in view of Perry (US 3,811,036).

Applicants respectfully traverse the rejections. The applied references fail to disclose or suggest the inventions defined by Applicants' claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

Claim 11 recites a method comprising receiving one or more images of a biological growth medium, identifying a first number of biological agents associated with an interior portion of the biological growth medium, identifying a second number of biological agents associated with a perimeter portion of the biological growth medium, and excluding from the second number one or more biological agents within a defined distance from an edge of a growth area of the growth medium when the first number is less than a threshold. Claims 33 and 54 recite features similar to those of claim 11, but claim a computer readable medium and system respectively.

In the Office Action, the Examiner stated that Weiss discloses all of these features of claim 11, but recognized that Weiss does not specifically disclose wherein the first count is associated with an interior portion of the biological growth medium and the second count is associated with a perimeter portion of the biological growth medium. The Examiner cited Vaidyanathan as teaching a first count being associated with an interior portion of the biological growth medium and the second count being associated with a perimeter portion of the biological growth medium. Based on these statements, the Examiner concluded that a person of ordinary skill in the art would have been motivated to modify the techniques of Weiss in view of Vaidyanathan to arrive at the features of claim 11. In particular, the Examiner stated that a person of ordinary skill in the art would have been motivated to modify the techniques of Weiss in view of Vaidyanathan in order to accurately identify valid biological colonies in various parts of the biological growth medium, including the perimeter and interior.

The Examiner's analysis is incorrect for several reasons. First, the teaching of Weiss does not suggest any counting techniques in which different counts are performed with respect to different areas of a biological growth medium. Instead, Weiss teaches a technique for counting colonies over the full area of a biological growth plate. To the extent that Weiss performs first and second counts, the second count is performed over the same areas as the first count, but at a

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different level of gray scale. On the basis of these different counts at different levels of gray scale, Weiss makes determinations of whether some of the colonies identified in the first count should be combined to specify a single colony. The techniques of Weiss have little in common with the techniques recited in Applicants' pending claims.

Even if Vaidyanathan suggests a first count associated with an interior portion of the biological growth medium and a second count associated with a perimeter portion of the biological growth medium (which it does not), a person of ordinary skill in the art would not have been motivated to modify the techniques of Weiss to incorporate this feature. In particular, a person of ordinary skill in the art would not change the techniques of Weiss, which performs successive counts over the full area of the biological growth plate, to perform a first count on an interior portion and a second count on a perimeter portion of the biological growth medium. This would make no sense to a person of ordinary skill in the art, and would undermine the teaching of Weiss.

For example, if this modification was made to the techniques of Weiss, then it would be impossible to make the determinations of whether some of the colonies identified in the first count should be combined as a single colony based on the second count. The techniques of Weiss rely on the fact that counts are overlapping in the same area of the growth plate. Therefore, if first count was made in an interior portion and the second count on a perimeter portion of the biological growth medium, this would undermine the techniques of Weiss. In short, first and second counts at different levels of gray scale, over the full area of a biological growth plate (per Weiss), would never be modified by a person of ordinary skill in the art to use first and second counts that do not occur over the full area of the biological growth plate.

Furthermore, contrary to the Examiner's interpretation, Vaidyanathan does not actually suggest a first count associated with an interior portion of the biological growth medium and a second count associated with a perimeter portion of the biological growth medium. The passage of Vaidyanathan cited by the Examiner as suggesting a first count associated with an interior portion and a second count associated with a perimeter portion of the biological growth medium is reproduced below:

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The colony screening method of the present invention also comprises the step of subdividing the original histogram into $N+1$ histograms using the N global entropic threshold 30 gray levels as shown in block D of FIG. 33.

The colony screening method of the present invention also comprises the step of searching portions of the image

Nothing in this passage even remotely suggests a first count associated with an interior portion and a second count associated with a perimeter portion of the biological growth medium. Indeed, Applicants are generally confused as to why the Examiner thinks this passage of Vaidyanathan discloses or suggests a first count associated with an interior portion and a second count associated with a perimeter portion of the biological growth medium. Applicants respectfully submit that the passage reproduced above does not disclose the features attributed to the Vaidyanathan reference by the Examiner. Rather, this passage of Vaidyanathan merely describes subdividing a histogram indicating a distribution of gray levels. There appears to be no spatial aspect to the subdivision contemplated by Vaidyanathan, much less a teaching that would have suggested first and second counts in interior and perimeter portions of a biological growth medium. Instead, this passage appears to be concerned with post-count statistical analysis.

Finally, the Examiner's statement that a person of ordinary skill in the art would have been motivated to modify the techniques of Weiss in view of Vaidyanathan in order to accurately identify valid biological colonies in various parts of the biological growth medium appears to find no basis in the prior art. Instead, this purported motivation appears to have been taken from Applicant's own disclosure and not the prior art, which is improper in an obviousness analysis. Neither Weiss nor Vaidyanathan provides any teaching that would have suggested a need to perform any type of technique in order to more accurately identify valid biological colonies in the interior and perimeter of a biological growth medium.

For at least these reasons, all pending rejections are improper and must be withdrawn.

With regard to independent method claim 19 (and corresponding computer readable medium claim 41 and system claim 60), the Examiner applied the same analysis addressed above. However, for these claims, the Examiner further relied on the teaching of Perry. Specifically, the Examiner recognized that neither Weiss nor Vaidyanathan discloses flagging the biological growth medium for additional review if a number associated with the second count is greater than a factor multiplied by the first number.

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Method claim 19 recites receiving one or more images of a biological growth medium, identifying a first number of biological agents associated with an interior portion of the biological growth medium, identifying a second number biological agents associated with a perimeter portion of the biological growth medium, and flagging the biological growth medium for additional review if the second number is greater than a factor multiplied by the first number.

Claims 41 and 60 recite similar features.

In the Office Action, the Examiner relied on the same analysis used in the rejection of claim 11. Applicants respectfully traverse the rejections of claims 19, 41 and 60 for the same reasons advanced above with respect to claim 11.

With regard to claims 19, 41 and 60, the Examiner recognized that neither Weiss nor Vaidyanathan discloses flagging the biological growth medium for additional review if a number associated with the second count is greater than a factor multiplied by the first number. For this feature, the Examiner cited Perry, and concluded that a person of ordinary skill in the art would have been motivated to further modify the Weiss-Vaidyanathan combination in view of Perry to arrive at the features of claims 19, 41 and 60.

Like the other rejections, Applicants respectfully submit that the Examiner has misinterpreted the prior art. Specifically, the teaching of Perry does not suggest the features attributed to this reference by the Examiner.

The passage of Perry, which was cited by the Examiner in the rejection of claim 19, is reproduced below.

By means of the illuminated dot, hereinafter referred to as a "flag," it is possible for an operator to insure him-

self that all of the colonies have been counted. This illuminated dot is automatically superimposed over the colonies counted and provides a means of quality control of the instrument. It also avoids the necessity of double checking the count of the instrument manual counting.

Nothing in this passage even remotely suggests flagging the biological growth medium for additional review if the second number (associated with biological agents on a perimeter portion of the biological growth medium) is greater than a factor multiplied by the first number

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(associated with biological agents on an interior portion of the biological growth medium). Instead, Perry describes placing dots over colonies to show that they have been counted. For this additional reason, the rejections of claims 19, 41 and 60 are improper and must be withdrawn.

CONCLUSION

In view of the foregoing comments, Applicants respectfully request reconsideration by the Examiner. As explained above, the applied prior art references lack several features of Applicants' claims, and a person of ordinary skill in the art would not have arrived at the features of Applicants' claims based on the cited passages relied upon by the Examiner in rejecting Applicants' claims. Applicants do not acquiesce to any of the Examiner's rejections or characterizations of the prior art, and reserve the right to present additional arguments with respect to the independent or various dependent claims.

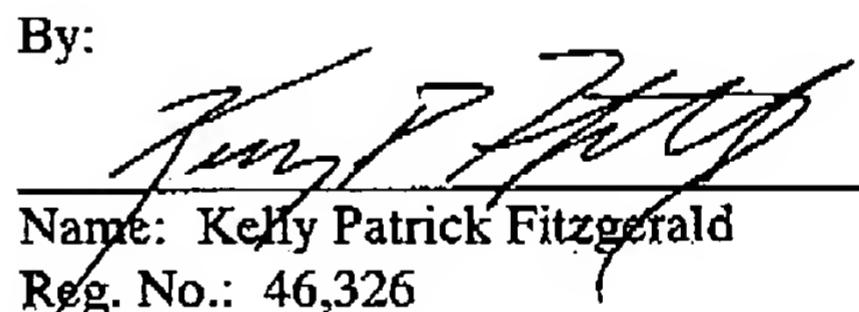
All claims in this application are in condition for allowance. Applicants respectfully request reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

Date:

April 2, 2007

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